

What is claimed is:

1. An optical filtering module comprising:

5 an optical filter for at least one of transmitting, attenuating and reflecting light having a certain wavelength range,

a first optical system having an optical fiber for guiding light to be transferred to said optical filter,

10 a second optical system having an optical fiber for guiding light transferred from said optical filter, said second optical system being opposingly arranged to said first optical system while interposing said optical filter therebetween, and

15 an outer cylindrically shaped glass holder for holding therein said optical filter, said first optical system and said second optical system secured thereto.

2. The optical filtering module according to claim 1, wherein each of said first and second optical systems comprises a lens optically connecting said optical fiber and said optical filter respectively, said optical filter being secured to one of said lenses of said first and second optical systems.

25 3. The optical filtering module according to claim 1, wherein each of said first and second optical systems comprises an optical fiber holder having a through hole for receiving said optical fiber inserted therein.

30 4. The optical filtering module according to claim 3, wherein each of said first and second optical systems comprises an inner holder for holding said optical fiber holder and said lens, said inner holders being secured to said outer holder with a photo-curing adhesive.

5. The optical filtering module according to claim 4, wherein said inner holder is made of a glass.

5 6. An optical multi/demultiplexer comprising:
a wavelength selection filter for selectively transmitting light of a certain wavelength range and reflecting light of other wavelength ranges,

a first optical system having an optical fiber for guiding
10 light to be transferred to said wavelength selection filter and an optical fiber for guiding light to be transferred from said wavelength selection filter,

a second optical system having an optical fiber for
guiding light transferred to or from said wavelength selection
15 filter, said second optical system being opposingly arranged to said first optical system while interposing said wavelength selection filter therebetween, and

an outer cylindrically shaped glass holder, said outer
holder being adapted to hold therein said wavelength selection
20 filter, said first optical system and said second optical system secured thereto.

7. The optical multi/demultiplexer according to claim 6,
25 wherein each of said first and second optical systems comprises a lens optically connecting said optical fiber and said wavelength selection filter respectively, said wavelength selection filter being secured to said lens of said first optical system.

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8. The optical multi/demultiplexer according to claim 6,
wherein each of said first and second optical systems comprises
an optical fiber holder having a through hole for receiving said
35 optical fiber inserted therein.

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9. The optical multi/demultiplexer according to claim 8,
wherein said optical fiber holder of said first optical system
has a through hole rectangularly formed for receiving both of
said optical fibers for guiding light transferred to and from
5 said wavelength selection filter.

10. The optical multi/demultiplexer according to claim 8,
wherein said optical fiber holder is made of a glass.

11. The optical multi/demultiplexer according to claim 8,
wherein each of said first and second optical systems comprises
an inner holder for holding said optical fiber holder and said
15 lens, said inner holders being secured to said outer holder with
a photo-curing adhesive.

12. The optical multi/demultiplexer according to claim 11,
20 wherein said inner holder is made of a glass.

13. The optical multi/demultiplexer according to claim 7,
wherein said lenses of said first and second optical systems
25 are graded index lenses having a pitch not less than 0.2 and
not larger than 0.25.

14. An optical signal separating device comprising a
30 plurality of optical multi/demultiplexers, each of said optical
multi/demultiplexers comprising:

a wavelength selection filter for selectively
transmitting light of a certain wavelength range and reflecting
light of other wavelength ranges,

35 a first optical system having an optical fiber for guiding
light to be transferred to said wavelength selection filter and

an optical fiber for guiding light to be transferred from said wavelength selection filter,

5 a second optical system having an optical fiber for guiding light transferred to or from said wavelength selection filter, said second optical system being opposingly arranged to said first optical system while interposing said wavelength selection filter therebetween, and

10 an outer cylindrically shaped glass holder, said outer holder being adapted to hold therein said wavelength selection filter, said first optical system and said second optical system secured thereto,

15 wherein said plurality of optical multi/demultiplexers are sequently connected in series so as to connect an optical fiber for guiding light to be transferred from said wavelength selection filter of said first optical system of a preceeding sequentially connected optical multi/demultiplexer to an optical fiber for guiding light to be transferred to said wavelength selection filter of said first optical system of a following sequentially connected optical multi/demultiplexer, to thereby sequently separate light of a certain bandwidth from an inputted light signal including light of different wavelengths and output said light of said certain bandwidth from said optical fiber of said second optical system.

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15. An optical signal merging device comprising a plurality of optical multi/demultiplexers, each of said optical multi/demultiplexers comprising:

30 a wavelength selection filter for selectively transmitting light of a certain wavelength range and reflecting light of other wavelengths,

a first optical system having an optical fiber for guiding light to be transferred to said wavelength selection filter and an optical fiber for guiding light to be transferred from said wavelength selection filter,

a second optical system having an optical fiber for

guiding light transferred to or from said wavelength selection filter, said second optical system being opposingly arranged to said first optical system while interposing said wavelength selection filter therebetween, and

5 an outer cylindrically shaped glass holder, said outer holder being adapted to hold therein said wavelength selection filter, said first optical system and said second optical system secured thereto,

10 wherein said plurality of optical multi/demultiplexers are sequently connected in series so as to connect an optical fiber for guiding light to be transferred to said wavelength selection filter of said first optical system of a preceeding sequentially connected optical multi/demultiplexer to an optical fiber for guiding light to be transferred from said wavelength selection filter of said first optical system of a following sequentially connected optical multi/demultiplexer, to thereby sequently merge light of a certain bandwidth inputted from said second optical system and transmitted through said wavelength selection filter.

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16. An optical equalizer comprising:

a first optical system having an optical fiber for guiding light to be equalized,

25 an equalization filter for equalizing light introduced through an optical fiber of said first optical system,

a second optical system having an optical fiber for guiding light having passed through said equalization filter, said second optical system being opposingly arranged to said first optical system while interposing said equalization filter therebetween, and

30 an outer cylindrically shaped glass holder for holding therein said equalization filter, said first optical system and said second optical system secured thereto.

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17. The optical equalizer according to claim 16, wherein each of said first and second optical systems comprises a lens optically connecting said optical fiber and said equalization filter respectively, said equalization filter being secured to
5 one of said lenses of said first and second optical systems.

18. The optical equalizer according to claim 16, wherein each of said first and second optical systems comprises an optical
10 fiber holder having a through hole for receiving said optical fiber inserted therein.

19. The optical equalizer according to claim 18, wherein said
15 optical fiber holder is made of a glass.

20. The optical equalizer according to claim 18, wherein each of said first and second optical systems comprises an inner
20 holder for holding said optical fiber holder and said lens, said inner holders being secured to said outer holder with a photo-curing adhesive.

21. The optical equalizer according to claim 20, wherein said
25 inner holder is made of a glass.

22. The optical equalizer according to claim 17, wherein said
30 lenses of said first and second optical systems are graded index lenses having a pitch not less than 0.2 and not larger than 0.25.